

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): An automatic gain controller configured to control a gain of a variable gain amplifier provided at an input of an analog-to-digital converter, comprising:

a gain setting unit configured to periodically update the gain of the variable gain amplifier in accordance with an output from the analog-to-digital converter; and

a mode selection unit configured to select ~~one~~ for each frame a single operating mode of a plurality of operating modes characterized by different gain updating periods ~~in accordance with~~ based on either a one-frame average value ~~and or~~ or a one-slot average value of the output from the analog-to-digital converter, the selected operating mode being set in said gain setting unit,

wherein one frame includes a plurality of slots.

Claim 2 (Currently Amended): A wireless communication apparatus comprising:
an antenna configured to receive a radio signal;

a variable gain amplifier configured to amplify the received signal using a variable gain;

an analog-to-digital converter configured to convert the amplified signal into a digital signal;

a gain setting unit configured to periodically update the gain of the variable gain amplifier in accordance with an output from an analog-to-digital converter; and

an operating mode selection unit configured to select ~~one~~ for each frame a single operating mode of a plurality of operating modes characterized by different gain updating

periods ~~in accordance with~~ based on either a one-frame average value ~~and~~ or a one-slot average value of the output from said analog-to-digital converter, the selected operating mode being set in said gain setting unit,

wherein one frame includes a plurality of slots.

Claim 3 (Currently Amended): A wireless communication apparatus comprising:

an antenna configured to receive a radio signal;

an isolator configured to isolate an I-component and a Q-component orthogonal to each other from the received signal;

an I-component variable gain amplifier and a Q-component variable gain amplifier configured to amplify the isolated I-component and Q-component, respectively, using a variable gain;

an I-component analog-to-digital converter and a Q-component analog-to-digital converter configured to convert the amplified I-component and Q-component, respectively, into respective digital signals;

a gain setting unit configured to periodically update a gain common to said I-component variable gain amplifier and said Q-component variable gain amplifier, in accordance with outputs from said I-component analog-to-digital converter and said Q-component analog-to-digital converter; and

an operating mode selection unit configured to select ~~one~~ for each frame a single operating mode of a plurality of operating modes characterized by different gain updating periods ~~in accordance with~~ based on either a one-frame average value ~~and~~ or a one-slot average value of the outputs from said I-component analog-to-digital converter and said Q-component analog-to-digital converter, the selected operating mode being set in said gain setting unit,

wherein one frame includes a plurality of slots.

Claim 4 (Currently Amended): A wireless communication apparatus comprising:

an antenna configured to receive a radio signal;

an isolator configured to isolate an I-component and a Q-component orthogonal to each other from the received signal;

an I-component variable gain amplifier and a Q-component variable gain amplifier configured to amplify the isolated I-component and Q-component using a variable gain;

an I-component analog-to-digital converter and a Q-component analog-to-digital converter configured to convert the amplified I-component and Q-component into respective digital signals;

an I-component gain setting unit configured to periodically update a gain of said I-component variable gain amplifier in accordance with an output from said I-component analog-to-digital converter;

an I-component operating mode selection unit configured to select ~~one~~ for each frame a single operating mode of a plurality of operating modes characterized by different gain updating periods ~~in accordance with~~ based on either a one-frame average value ~~and or~~ or a one-slot average value of the output from said I-component analog-to-digital converter, the selected operating mode being set in said I-component gain setting unit;

a Q-component gain setting unit configured to periodically update a gain of said Q-component variable gain amplifier in accordance with an output from said Q-component analog-to-digital converter; and

a Q-component operating mode selection unit configured to select ~~one~~ for each frame a single operating mode of a plurality of operating modes characterized by different gain updating periods ~~in accordance with~~ based on either a one-frame average value ~~and or~~ or a one-

slot average value of the output from said Q-component analog-to-digital converter, the selected operating mode being set in said Q-component gain setting unit,
wherein one frame includes a plurality of slots.

Claim 5 (Currently Amended): A wireless communication apparatus comprising:
a first antenna and a second antenna configured to receive a radio signal:
a first variable gain amplifier and a second variable gain amplifier configured to amplify the signal received via said first antenna and second antenna, respectively;
a first analog-to-digital converter and a second analog-to-digital converter respectively configured to convert the amplified signals into respective digital signals;
a gain setting unit configured to periodically update a gain common to said first variable gain amplifier and second variable gain amplifier in accordance with an output from said first analog-to-digital converter and an output from said second analog-to-digital converter; and

an operating mode selection unit configured to select ~~one~~ for each frame a single operating mode of a plurality of operating modes characterized by different gain updating periods ~~in accordance with~~ based on either a one-frame average value ~~and or~~ or a one-slot average value of the outputs from said first analog-to-digital converter and said second analog-to-digital converter, the selected operating mode being set in said gain setting unit,
wherein one frame includes a plurality of slots.

Claim 6 (Previously Presented): The wireless communication apparatus according to claim 2, further comprising a processing unit configured to calculate a received power from the output value of the analog-to-digital converter using the gain set in the gain setting unit.

Claim 7 (Previously Presented): The wireless communication apparatus according to claim 3, further comprising a processing unit configured to calculate a received power from the output value of the analog-to-digital converter using the gain set in the gain setting unit.

Claim 8 (Previously Presented): The wireless communication apparatus according to claim 4, further comprising a processing unit configured to calculate a received power from the output value of the analog-to-digital converter using the gain set in the gain setting unit.

Claim 9 (Previously Presented): The wireless communication apparatus according to claim 5, further comprising a processing unit configured to calculate a received power from the output value of the analog-to-digital converter using the gain set in the gain setting unit.

Claim 10 (Previously Presented): The automatic gain controller according to claim 1, wherein

the operating mode selection unit is configured to select between a high-speed mode and a normal mode, and

the operating mode selection unit is configured to select the high-speed mode when the one-frame average value lies outside a first range and the one-slot average value lies outside a second range for each of a plurality of consecutive slots, the first range being a lesser included range of the second range.

Claim 11 (Previously Presented): A wireless communication apparatus according to claim 2, wherein

the operating mode selection unit is configured to select between a high-speed mode and a normal mode, and

the operating mode selection unit is configured to select the high-speed mode when the one-frame average value lies outside a first range and the one-slot average value lies outside a second range for each of a plurality of consecutive slots, the first range being a lesser included range of the second range.

Claim 12 (Previously Presented): The wireless communication apparatus according to claim 3, wherein

the operating mode selection unit is configured to select between a high-speed mode and a normal mode, and

the operating mode selection unit is configured to select the high-speed mode when the one-frame average value lies outside a first range and the one-slot average value lies outside a second range for each of a plurality of consecutive slots, the first range being a lesser included range of the second range.

Claim 13 (Previously Presented): The wireless communication apparatus according to claim 4, wherein

each of the operating mode selection units is configured to select between a high-speed mode and a normal mode, and

each of the operating mode selection units is configured to select the high-speed mode when the respective one-frame average value lies outside a first range and the respective one-slot average value lies outside a second range for each of a plurality of consecutive slots, the first range being a lesser included range of the second range.

Claim 14 (Previously Presented): The wireless communication apparatus according to claim 5, wherein

the operating mode selection unit is configured to select between a high-speed mode and a normal mode, and

the operating mode selection unit is configured to select the high-speed mode when the one-frame average value lies outside a first range and the one-slot average value lies outside a second range for each of a plurality of consecutive slots, the first range being a lesser included range of the second range.

Claim 15 (Currently Amended): A method of controlling a gain of a variable gain amplifier provided at an input of an analog-to-digital converter, comprising:

periodically updating the gain of the variable gain amplifier in accordance with an output from the analog-to-digital converter; and

selecting for each frame a single operating mode ~~one~~ of a plurality of operating modes characterized by different gain updating periods ~~in accordance with~~ based on either a one-frame average value ~~and~~ or a one-slot average value of the output from the analog-to-digital converter, the selected operating mode being set in said gain setting unit,

wherein one frame includes a plurality of slots.

Claim 16 (Previously Presented): The automatic gain controller according to claim 15, wherein the step of selecting one of a plurality of operating modes includes:

selecting between a high-speed mode and a normal mode; and

selecting the high-speed mode when the one-frame average value lies outside a first range and the one-slot average value lies outside a second range for each of a plurality of consecutive slots, the first range being a lesser included range of the second range.

Claim 17 (Currently Amended): An automatic gain controller configured to control a gain of a variable gain amplifier provided at an input of an analog-to-digital converter, comprising:

a gain setting unit configured to periodically update the gain of the variable gain amplifier in accordance with an output from the analog-to-digital converter; and

means for selecting for each frame a single operating mode ~~one~~ of a plurality of operating modes characterized by different gain updating periods ~~in accordance with~~ based on either a one-frame average value ~~and~~ or a one-slot average value of the output from the analog-to-digital converter, the selected operating mode being set in said gain setting unit, wherein one frame includes a plurality of slots.

Claim 18 (Previously Presented): The automatic gain controller according to claim 17, wherein the means for selecting one of a plurality of operating modes includes:

means for selecting between a high-speed mode and a normal mode; and

means for selecting the high-speed mode when the one-frame average value lies outside a first range and the one-slot average value lies outside a second range for each of a plurality of consecutive slots, the first range being a lesser included range of the second range.